

## AMENDMENT - SPECIFICATION

*Delete paragraph 0032 and insert the following in place thereof:*

[0032] In the embodiment shown in Figure 1, the profile buffer for storing captured event profiles consists of two levels. The first level profile buffer is a profile register file, comprising a frame for each event being monitored. The second level profile buffer is a profile backstore buffer, comprising one memory buffer for each event being monitored. When an event profile is captured, there is a determination whether the registers within the frame for the event are fully allocated ~~or another or another~~ condition set by the software component is met, process block 115. In one embodiment, the microprocessor may proactively spill the content of an event profile frame into the appropriate memory buffer within the profile backstore buffer when sufficient memory space is available, thereby maintaining available register space and allowing the microprocessor to continue writing without encountering delay when the all registers in the event profile frame are allocated. A determination whether the registers are fully allocated may be conducted in parallel with other determinations if proactive spilling is enabled. If the registers in the frame are not fully allocated and no other established condition is not met, the captured event profile is stored in a register in the appropriate frame within the profile register file, process block 120, and the process continues with the capturing of event profiles, process block 110. If the frame registers of the event are fully allocated or another condition is met, there is a determination whether the memory buffer for the event in the profile backstore buffer is fully allocated or some other established condition is met, process block 125. If the memory buffer is not fully allocated and no other condition is met, the event profiles currently contained in the

frame are stored in the profile backstore buffer, process block 130, and the new event profile is stored in the frame registers for the event, process block 132. The process then continues with the capturing of event profiles, process block 110.

*Delete paragraph 0046 and insert the following in place thereof:*

[0046] Under [[an]] another embodiment, a buffering mechanism is utilized to reduce the turn around time for a handler routine to process data in the event profile buffer. According to the embodiment, when a memory buffer is fully allocated and an event handler routine begins operation, an empty buffer is made available to the microprocessor to begin storing new captured profile data. For example, the handler routine may notify the microprocessor regarding the starting address and size of the empty memory buffer to be used for the event, such that the collection of event profiles can continue while the previously collected data is processed.